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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,344	04/02/2001	Makoto Nagai	205522US2	1741

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10/04/2003

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EXAMINER

LEWIS, DAVID LEE

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 10/04/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/822,344

Applicant(s)

NAGAI ET AL.

Examiner

David L Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 04 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claims 1, 2, 5-15, and 22-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang et al. (6154190).**
2. **As in claim 1, Yang et al. teaches of a driving method for driving a liquid crystal display device with a cholesteric liquid crystal having a memory mode of operation, comprising: a first stage of applying a voltage so that the alignment of the cholesteric liquid crystal is substantially in parallel to a voltage application direction, figure 3A item 110; a second stage of applying a voltage to change the state of the cholesteric liquid crystal to a homogeneous state or a homogeneous/planar-mixed state, figure 3A item 114; and a third stage of applying a voltage to change the state of the cholesteric liquid crystal from the homogeneous state or the homogeneous/planar-mixed state to a focalconic state, figure 3A item 116.**

3. As in claim 2, Yang et al. teaches of driving method for driving a liquid crystal display device with a cholesteric liquid crystal having a memory mode of operation, comprising: a first stage of applying a voltage so that the alignment of the cholesteric liquid crystal is substantially in parallel to a voltage application direction, **figure 3A item 110**; a second stage of applying a voltage to change the state of the cholesteric liquid crystal to a homogeneous state or a homogeneous/planar-mixed state, **figure 3A item 114**; and a third stage of applying a voltage to change the state of the cholesteric liquid crystal from the homogeneous state or the homogeneous/planar-mixed state to a focalconic/planar mixed state, **figure 3B item 116, column 10 lines 33-48**.

4. As in claims 8, 15, and 25, Yang et al. teaches of a driving apparatus for driving a liquid crystal display device with a cholesteric liquid crystal having a memory mode of operation, **column 1 lines 20-25, column 20 lines 60-65**, comprising: a first period determining means for determining a period of a first stage, **figure 7 item 280**; a second period determining means for determining a second period in succession to the first stage, **figure 7 item 282**; a third period determining means for determining a third period in succession to the second stage, **figure 7 item 284**; a voltage application means, **figure 7 item 210**; and a frequency controlling means for operating repeatedly the second period determining means and the third period determining means after the operation of the first period determining means, **figure 7 item 220**, wherein a voltage is applied to the cholesteric liquid crystal so that its alignment is substantially in parallel to

a voltage application direction in the first period produced by the first period determining means, **figure 5 item period 1**, wherein a voltage is applied to the cholesteric liquid crystal to change the state of the liquid crystal to a homogeneous state or a homogenous/planar-mixed state in the second period produced by the second period determining means, **figure 5 item period 2**, and wherein a voltage is applied to the cholesteric liquid crystal to accelerate a change of the state from the homogeneous state or the homogenous/planar-mixed state to a focalconic state or an intermediate state between planar and focalconic states in the third period produced by the third period determining means, **figure 5 item period 3**.

5. As in claim 9. Yang et al. teaches of a driving method for driving a liquid crystal display device with a cholesteric liquid crystal having a memory mode of operation, **column 1 lines 20-25**, comprising: a first stage of applying a voltage so that the alignment of the cholesteric liquid crystal is substantially in parallel to a voltage application direction before a voltage is applied to each pixel based on conditions of voltage corresponding to display data, **figure 3A item 110**; a second stage of applying a voltage to change the state of the cholesteric liquid crystal to a homogeneous state or a homogeneous/planar-mixed state, **figure 3A item 114**; and a third stage of applying a voltage to accelerate the change of the cholesteric liquid crystal from the homogeneous state or the homogeneous/planar-mixed state to a focalconic state or a focalconic/planar mixed state, **figure 3A item 116, figure 3B item 116**, wherein the

second stage and the third stage are repeated after the first stage, **column 12 lines 33-55**.

6. As in claim 22, Yang et al. teaches of a driving method for driving a liquid crystal display device with a cholesteric liquid crystal having a memory mode of operation, **column 1 lines 20-25**, comprising: a first stage of applying a voltage so that the alignment of the cholesteric liquid crystal is substantially in parallel to a voltage application direction, **figure 3A item 110**; and a second stage of applying a voltage to change the state of the cholesteric liquid crystal to a homogenous state or a planar state, **figure 3A item 114**.

7. As in claim 27, Yang et al. teaches of a driving method for driving a liquid crystal display device with a cholesteric liquid crystal having a memory mode of operation, **column 1 lines 20-25**, wherein when a time spent until the cholesteric liquid crystal in a homeotropic state by the application of a voltage indicates the lowest dielectric constant after the application of the voltage is stopped is represented by t_H , **figure 3A item T1**, a voltage is applied to the cholesteric liquid crystal so that the alignment of the liquid crystal is substantially in parallel to a voltage application direction, **figure 3A item 110**, **figure 3B item 110**, **column 9 lines 25-40**, the state of the cholesteric liquid crystal is changed by applying a voltage pulse of lower than t_H , **figure 3A item 114**, and a voltage pulse is applied to effect a display, **figure 3A item 114 and 116**.

8. As in claims 5, 10, and 23, Yang et al. teaches of wherein the voltage value applied in the second stage is OV, figure 3A item 114, column 3 lines 19-21, figure 5 item 114. As in claims 6 and 12, Yang et al. teaches of wherein a voltage waveform applied in the first stage comprises a pulse-like voltage having a voltage amplitude of V1, figure 3A item 110, wherein a voltage waveform applied in the third stage comprises a pulse-like voltage having a voltage amplitude of V3, figure 3A item 115, and wherein V1, is larger than V3 and t3 is smaller than t1, where t1, and t3 are respectively voltage application times in the first and third stages, figure 3A items Vp, T1 and Ve, T3. As in claim 7 and 14, Yang et al. teaches of wherein when a line at a time operation is carried out to apply a voltage waveform based on display data of each display pixel after the first stage to the third stage, column 10 lines 33-61, and conditions of applying voltages are determined so as to write a planar state in an ON display and to write a focalconic state in an OFF state, column 9 lines 10-26, a pulse width modulation system is used for a display having a gray scale, column 10 lines 30-35, column 16 lines 5-25. Wherein the focalconic state appears black/OFF and the planar state is highly reflective appearing white or ON. As in claim 13. Yang et al. teaches of, wherein a voltage waveform applied in the first stage comprises a pulse-like voltage having a voltage amplitude of V1, wherein a voltage waveform applied in the third stage comprises a pulse-like voltage having a voltage amplitude of V3, figure 3A items 110 and 116, and wherein V1, is equal to V3, column 9 lines 35-55, column 10 lines 50-61, and t3 is smaller than t1 where t1, and t3 are respectively voltage application times in the first

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and third stages, column 9 lines 35-55, column 10 lines 50-61. **As in claim 11**, Yang et al. teaches of wherein the second and third stage repeats 2 to 10 times, column 12 lines 33-55. **As in claim 24**, Yang et al teaches wherein the period of the second stage is .3-100 ms, column 10 lines 1-10. **As in claim 26**, Yang et al teaches wherein: the liquid crystal display device is provided with row electrodes and column electrodes, figure 7 item 10, column 8 lines 60-67; a passive addressing type driving is conducted, column 8 lines 60-67; the voltage application circuit comprises a row driver for driving the row electrodes and a column driver for driving the column electrodes, figure 7 items 210 and 216; and a controlling circuit is provided for instructing the row driver to apply a voltage of a non-display state to all the row electrodes for instructing the column driver to apply a voltage of an ON display to all the column electrodes in the first period, figure 7 item 220.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (6154190) in view of Wu et al. (5933203).**

10. As in claims 16-21, Yang et al. teaches of the invention as applied above to claims 1, 2, 5-15, and 22-27, however Yang fails to explicitly teach of said temperature compensation of said driving signals. Wu et al. teaches of said temperature compensation for a like display as taught by Yang, column 15 lines 20-50, wherein Wu suggests the driving apparatus can appropriately increase or decrease the duration of the driving signals to compensate for variations in display temperature. Wu teaches for low temperatures increasing the driving voltage or driving duration is necessary. Therefore it would have been obvious to the combine the temperature compensation of Wu with the driving apparatus of Yang because Wu suggests temperature compensation improves the display response time, as found in claims 16-21.

11. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (6154190).

12. As in claims 3 and 4, Yang et al. fails to explicitly teach of said time range spent until the cholesteric liquid crystal in a homeotropic state by the application of a voltage indicates the lowest dielectric constant after the application of the voltage is stopped, however Yang teaches the selection phase time lasts only a short period on the order of a few milliseconds, column 10 lines 1-10, wherein said range would have been an obvious design choice for the purpose of complying with Yang's suggested

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time in relation to Yang's preparation and evolution phases, which are approximately near the suggested range, as found in claims 3 and 4.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L Lewis whose telephone number is 703 306-3026. The examiner can normally be reached on M, T, TH, F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703 305-4938.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231


or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

October 1, 2003


BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600